The Subjective Development through Unfolding Learning Activities

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This article deals with the subjective development of college students participating in blended learning activities. We present a research project concerning the self-positioning changes and the thinking processes development related to the participation in such activities. The project is shaped by two studies performed within the Italian University context. The first study concerns the Self-positioning changes occurring within group discussions. Results from this study show that the such positioning change over the learning experience and that they are closely related to the participation in the blended activities and mediated by the use of new technology. Thus, new research questions arose from this study, concerning the role of activities and the possible development of thinking processes as well. The second study has an explorative aim and focuses on two case analyses investigating the students' thinking flow during the participation in problem solving activities. Results show that the thought has a multi-dimensional structure which changes from the beginning to the end of the course and that the nature of activities influences the performance of the students.

Keywords: blended learning activities, Self-positioning, thinking processes development, thinking structure.

Introduction

Nowadays, learning processes represent phenomena of special interest to the Educational Psychology, since their complexity is continuously increased by several aspects. Indeed, we contend that the growing instructional level in the Western society, the political and institutional requirement of a life-long learning, and the involvement in both formal and informal learning experiences have a crucial function in such a complexity. At the same time, people continuously participate in learning experiences in which the use of new mediational tools play a fundamental role. Therefore, research is required to answer the questions arising from the current learning contexts and to deal with topics concerning new forms of development, new space-time dimensions of learning, different systems of learning, and so on. Far from answering to these questions, this article refers to the field of the Educational Psychology and tries to sketch the subjective developmental processes occurring during the participation in blended learning contexts (Bonk & Graham, 2005). Blended educational activities combine the use of online communication technologies and face-to-face interaction. As some authors (Brown & Campione, 1990; Ligorio, 2011; Wenger, 1998; Wortham, 2004) pointed out, participation in educational activities affects the way we perceive and present ourselves. Learning contexts can be highly social, especially when they are organized to support collaborative activities and when they include technologies to enhance communication among participants. Indeed, on the one hand, the mediation of technology introduces new space-time dimensions that complement and intertwine with the time and space of face-to-face communication. On the other hand, blended educational activities allow the creation of a multiplicity of communication formats available (Bonk & Graham, 2005) and the formation of several discursive threads (Black, Levin, Mehan & Quinn, 1983). Keeping in mind this role of new technology, we shed light on two aspects related to the Self-development, which concern the identity changes and the thinking development. Namely, we describe two interconnected studies: the first study focuses on the identity changes understood as Self-positioning processes occurring within students' group discussions. Since identity results to be connected to the system of learning activities and is interpreted as a component within the set of higher mental functions, the second study arose from this first and focuses on the investigation of the students' thinking flow during the participation in problem solving activities. Both the studies are performed within a blended learning context and are interested in understanding the role of learning activities in such developmental processes. We will pay special attention to the second study, since it deals with the issue of the thinking development representing a topic of particular interest within the community of the Cultural-Historical Psychology journal. Thus, we will first depict the theoretical background of the studies and the research context, that is a University blended course. Secondly, we will summarize the first study underlining the main results and highlight the further research questions emerged from this study. Consequently, we will depict the second study describing how the structure of the stu-

dents' thinking processes changes over time through the participation in problem solving activities mediated by the use of new technologies.

Theoretical perspective

The theoretical background of this article is represented by Dialogical Self Theory (DST) (Hermans, 1996; 2004; Hermans & Hermans-Konopka, 2010) and Cultural Historical Theory, which originated by the works of Vygotsky (1978; 1983). We pay particular attention on the idea of alterity, as a joining concept that links the two theories. Indeed, even if DST argues that Self-development depends on the dialogical relationships among individuals-contexts-tools-activities and CHT refers to the relevance of dialectic relationships, the role of the Other represents one of the main points in both the theories. From the DST perspective, the Self is shaped through relational processes of speaking and dialogue. The main idea in this field is that existence itself can be understood as dialogue (Holquist, 1990) and that every experience is tracked dialogically (Valsiner, 2004). At the same time, from the CHT perspective, intersubjectivity has a fundamental function in the developmental processes, since they occur firstly socially and then as inner forms. We refer to the DST as a lens for interpreting identity as a flexible and dynamic aspect of the Self, whereas CHT represents our conceptual tool to understand how identity itself enters in the higher mental functions structure and what role thinking processes play in such a structure. Let us to describe the main concepts of each theory that represent the conceptual set to which we refer in our studies.

The Dialogical Self Theory grounds on the Bakhtin's concepts (1981; 1984) of dialogism, polyphony, and chronotope, proposing an interpretation of identity as a negotiation process (Adams, Markus, 2001). Indeed, from this perspective, a dynamic multiplicity of I-positions features the Self and «the I can move from one spatial position to another according to space-time changes. The I fluctuates among different and even opposed positions, and has the capacity imaginatively to endow each position with a voice, so that dialogical relations between positions can be established» (Hermans, 2002, p. 32). Thus, the Self is understandable as a multi-voiced unity within which a polyphony of voices occur. These voices are rooted in space-time dimensions and the dialogical structure of the dialogical Self cannot be grasped without observing chronotopes within which the polyphonic processes are placed. Indeed, the concept of position itself reminds the standing in a place-space at a specific time. When we talk about the Self, we refer to an imaginal space — closely intertwined with the physical one — within which the I-positions dynamically move. Thus, the Dialogical Self can be represented by several concentric circles within which internal and external I-positions enter in relationships with each. The internal positions are perceived as a part of myself, instead of the external positions that are felt as part of the environment. This view on the Self as flexible and dynamic allows taking into account the relevance that

social relations and alterity have in its development, creating a connecting point with CHT. However, from this discourse, some questions arise: what is the relation between the concerning about Self-positioning and the view of CHT about development? How is the Self-formation (in terms of I-positions) in relation with the whole individual development? Talking about development of personality, Vygotsky (1984) argued that it is the capacity of Self-management, of Self re-organization that emerges as the child occupies a new position in an activity. Lately, some authors (Holland et al., 1998) have suggested that from the vygotskyan point of view identity can be interpreted as one of the higher mental functions mediated by cultural artifact. «As a higher order psychological function, identities constitute a relatively organized complex of thoughts, feelings, memories and experience that a person can more or less durably evoke as a platform for action and response» (Holland et al., 1998, p. 4). Furthermore, Polman (2006) proposes the concept of identity trajectories as having a zone of proximal identity development «that relates to how one views where one is coming from and where one could go to as an agent» (p. 249). Thus, identity — here understood in terms of I-positions in dialogical relations — can be grasped within the set of higher mental functions, as interpreted by the CHT perspective. Thus, we refer to some concepts such as ZPD, social situation, higher mental functions, and activity, sketched as follows. We will draw a synthetic description of them, since they represent a common knowledge within the audience of this journal.

As Veresov (2010) points out, the concept of mental development is pivotal for understanding the theoretical and methodological approach about which we are talking. That is to say, the vygotskyan approach provides a system of principles able to explain the core aspects of the developmental process. Mental development implies a qualitative reorganization of the system of higher mental functions, within which each element is in relation to each other. The nature of development is understandable referring to the constitution of new formations and new laws within this system (Vygotsky, 1984). As the concept of development represents the rationale of the Vygotsky's theory, the social situation is the source from where development originates. Indeed, «[...] any function in the child's cultural development appears on stage twice, that is, on two planes. It firstly appears on the social plane and then on a psychological plane. Firstly among people as an inter-psychological category and then within the child as an intra-psychological category. This is equally true with regard of voluntary attention, logical memory, the formation of concepts and the development of volition» (Vygotsky, 1983, p. 145). Furthermore, a process of internalization represents the key of development, through which the social situation can become an individual mental function. This aspect is related with the concept of Zone of Proximal Development (ZPD). Vygotsky (1978) writes that it is «the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers» (p. 86). In this definition, the relevance of the rela-

tional dimension occurs again as the very nature of development and the capacity to solve problems appears as the core component of the higher mental functions formation. «The zone of proximal development defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state. These functions could be termed the «buds» or «flowers» of development rather than the «fruits» of development. The actual development level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively» (Vygotsky, 1978, p. 86).

The research context

This research was performed within a University blended course, where the online activities were delivered on an online environment called Synergeia and the offline activities were held in a University lecture room. The combination of offline and online activities was carefully designed to avoid a replication of the activities or a disproportionate use of one of them (Bonk & Graham, 2005). The course was held at the University of Bari (IT) and it was labeled 'Psychology of E-Learning'. It was reserved to students at a specialist level of Work and Organizational Psychology and it lasted 12 weeks. The content was organized into five modules covering the curricula of the course. Each of the five modules was guided by a specific research question launched by the professor, so that all the activities composing the module were aimed at reaching a shared answer to it. Every module starts with the professor's lesson held face to face and with materials and notes posted online. Right after, the professor assigned to each student one selected educational materials (e.g. a book chapter, a journal article). Each student is required to study the material assigned and to write a short review meant to highlight the elements contained into the reading material useful for the research question. Similarly to Jigsaw groups, once all the reviews are posted online, students read them all with the aim of negotiating (via web-forum) a common shared answer to the research question of the current module. Later, students prepare — as group work — a cognitive map organizing the various points composing the answer to the research question guiding the module (Ligorio, 2009). At the end of the course, students are required to build a collective and shared artifact, which is a checklist of indicators that each student will use individually to observe and evaluate other online learning contexts. All the activities of the course imply individual or collaborative problem solving processes and are aimed at replacing rote forms of learning with forms organized around discussion.

First study: Self-positioning related to learning activities

We will schematically present this study by referring to its aims, the data gathering method, the method of analysis, and the main results emerged from the analysis.

The main aims of this study are to understand how students position themselves within online and offline activities and how Self-positioning are influenced by the participation in blended learning activities. Data were gathered through 12 focus group discussions delivered during two academic years. Both online and offline discussions were conducted by a trained researcher at the beginning and at the end of the courses. The online focus group discussions took place in the Msn chat room, which represents an environment familiar to students and able to host several people at the same time. The offline focus group discussions took place in a University lecture room, where students attended all the offline lectures. Each discussion refers to a semistructured interview focusing on students' learning strategies, learning strategies related to the course blended activities, students' identities, students' perception about collaboration, competition and individual study, and the use of technology in educational contexts. Focus group discussions were delivered as described in the Table 1.

Table 1

Focus group discussions

	Offline (in a university room)	Online (in the msn chatroom)
Beginning of the courses	1, A. A. 2008—09 3, A. A. 2009—10	1, A. A. 2008—09 1, A. A 2009—10
End of the courses	1, A. A. 2008—09 3, A. A. 2009—10	1, A. A. 2008—09 1, A. A 2009—10

The offline discussions were transcribed by using the Jefferson's code (1984), whereas the online focus group discussions were saved as .doc files. All the discussions were analyzed through dialogical discourse analysis (Wortham, 2004), looking at references and predications, metapragmatic descriptors, quotations, evaluative indexicals, and epistemic modalizations. All these aspects guided the analysis and were interpreted within both the narrated and the storytelling events. The narrated event represents the content of utterances and discourses, whereas the storytelling event is the interactional context within which speakers utter their narrated event. Furthermore, we looked at discursive indicators of space-time dimensions, paying attention on the chronotopes shaping Self-positioning.

The results are summarized in the Table 2 and refer to the academic years considered all together. That is to say, findings are shown referring to online/offline discussions and beginning/end of the courses. The specificity of each discussion and their relations with the two different contexts are not taken into account in this context, since this brief description aims at framing the second study within the whole research project.

Results from this study show that the blended course represents a new chronotope that supports the formation of new I and We positions both in the narrated and in the storytelling events. However, the University lecture room and the chat room seem to be two different chronotopes eliciating different storytelling events. The new positions elicited involve the voices of the blended activities that in some way become characters in the discourse. During the

Focus Group Discussions. Results

Focus group discussions	Narrated event	Storytelling event	Chronotopes
Beginning of the courses / Offline	Two groups of opposite I-positions. One related to the students' learning 'real' experiences within which they position themselves as passive, superficial, and 'traditional'. The other one ideal and located in the realm of imagination and expectations respecting to the new course (students as collaborative, active, able to help others)	Students tend to enact the first group of positions appearing within the narrated event	The life-long educational experience (from the high school to the future blended course) represents a wide chronotope within which other chronotopes are included and interwoven. There is also an imaginative chronotope where positive positions as students are located
Beginning of the courses / Online	The second group of positions is not anymore imagined but is closely related to the context of the blended course as real. The voices of blended activities enter in the conversation	As above	The imaginative space-time not anymore imagined but is closely related to the context of the blended course as real. The voices of blended activities enter in the conversation
End of the courses / Offline	Students define themselves as more collaborative and supportive than the beginning of the course	The new positions described in the narrated event are enacted in the storytelling event	Students perceive the experience in the online environment and in this very conversation as a wide whole chronotope, within which a new character — the group — enters
End of the course / Online	As above	As above	The time and the space of the conversation are respectively contracted and stretched, creating a whole chronotope with the online environment

course students shape and interiorize a common culture based on collaboration, reciprocal support, and voicing of other students. Furthermore, students perceive those positions as closely related to the specific blended learning course and as not transferable to other contexts.

Second study: Thinking processes related to learning activities

Aims. The results emerged from the previous study lead to new research questions: 1) as the Self-development is related to the participation in the learning activities, do other higher mental functions develop at the same time? 2) Do thinking processes change over time? 3) How are they structured? Therefore, the main aims of this second study are to describe the structure of thinking processes during the participation in problem solving activities and to describe how this structure changes from the beginning to the end of the course. In this phase of analysis, our aim is the exploration and the description of the phenomena, instead of their explanation. This aim requires data gathering and analysis methods ad hoc, as described in the following sections.

Data gathering. Data were collected during the academic year 2009—2010, by following the Thinking aloud (TA) protocol (Ligorio, & Fuiano, 2006; van Someren, at al., 1994). This method allows grasping the thinking processes occurring during the participation in problem solving activities. During the TA sections, participants are required to express verbally their thoughts during the solution process of a problem task. The researcher has to observe some aspects and steps useful for collecting and treating data. We will describe their application as follows.

1. Participants' selection. The qualitative thinking change of one student has been studied. At the end of the first face-to-face lecture of the course, the researcher explained to the students that she was looking for a volunteer participating in a research aimed at study the thinking development. One student offered willingly for attending the study (Fernanda1, female, aged 22).

2. Problems selection. The blended learning activities in which the student is engaged represent the problem solving tasks. The think aloud protocols have been delivered during the collaborative construction of the map — second module of the course and during the collaborative construction and the individual use of the checklist.

3. Setting definition. All the thinking aloud sessions took place at the student's home. Thus, two research aims are achieved, that are the necessity to involve the student in a comfortable situation and the possibility of gathering data during the participation in the 'natural' setting of the learning activities. Therefore, the researcher is not present during the sessions and, in order to guarantee an efficient procedure, student was required to participate in a training session during the first module of the course.

4. Instructions. The instructions were printed on paper and provided to the participant before each TA session. The instruction was «This research aims at understanding the thinking processes that occur when people use new technologies to learn. Therefore, you are required to think aloud and record your thinking during some online activities (the construction of the map during the second module, the construction and the use of the checklist) of this course. You should verbalize every thought that goes through your head, even if it does not appear appropriate to you with the learning activity. Be free to record for all the time you want. Your recordings will be transcribed and handled strictly confidentially for the research aims. Thanks for your cooperation»*.

5. Recording. The student was asked to record her thinking aloud by producing a digital file.

6. Transcription. Even if the thinking aloud sessions do not imply conversations, we used the Jeffersonian method (1984) for transcribing them. Indeed, it provides the tools to show intonations, pauses, and paraverbal aspects of communication that can be useful for the results' interpretation.

In synthesis, four Thinking aloud sessions were arranged for this study: 1) one training session at the beginning of the course (during the 1st Module); 2) one data collection session at the beginning of the course (during the 2nd Module); 3) two data collection sessions at the end of the course (during the 5th and the 6th Module).

Method of analysis. The Thinking aloud sessions have been analyzed through directed qualitative content analysis, that aims at understanding a phenomenon retrospectively, without defining explicit a priori hypothesis and expectations. Hsieh, & Shannon (2005) point out three alternative approaches to qualitative content analysis: the conventional content analysis, the directed content analysis, and the summative content analysis. In this study, we use directed content analysis, by following six steps:

1. Definition of the preliminary coding system based on the literature and the results of the previous study. Three codes shaped this system: 1) 'Activities', that refers to the activities that the student mentions. This code grounds on the idea that all the thinking processes are related and refer to the activity in which people participate; 2) 'Context', that refers to the contextual aspects that are mentioned by the student. This code grounds on the idea that every thinking process is founded on the specific situation within which people are involved; 3) 'Artifacts', that refers to the artifacts (review, maps, notes, articles, etc.) that the student mentions. This code grounds on the idea that all the thinking process are mediated by the use of artifacts; 4) 'People', that refers to people dealing with the course (the teacher, other students, tutors, etc.) and mentioned by the student. This code

grounds on the idea that all the thinking processes are distributed among people and that the social situation represents the crucial stage in developmental processes;

2. Definition of the unit of analysis, that in this study corresponds to the unit of meaning, which represents the expression of an idea (Minichello et al., 1990), an argument chain or a discussion topic (Chi, 1997; Henri, 1992).

3. Reading and coding texts by using the first scheme of codes;

4. Identification of parts of text that could not be categorized and definition of a new set of codes (see the results section);

5. Reading and coding texts by using the new scheme of codes;

6. Calculating frequencies to describe how the categories occur in the different moments of the course.

Findings. We will present the results as follows: 1) description of the coding scheme; 2) showing and description of the frequencies.

1. Description of the coding scheme. As we already underlined, the initial coding scheme was characterized by four codes: activities, context, artifacts, and people. However, by reading the texts recorded in the three moments of the course, further categories emerged. All the steps entailing a change of the coding system have been discussed within our research team with other three researchers, in order to solve doubts and problems concerning the definitions of categories, coding rules, and categorization of specific case (Schilling, 2006). The first necessity was distinguishing the verbalized thinking from the activities that the student was performing. In fact, actions and activities in which she was involved are very often verbalized through sentences like «Let me open this file», «Now I'm going to answer the note», «Let me check the cell phone», and so on. Furthermore, the sound of tapping on the keyboard was recorded as well. Thus, all the notes could be analyzed by assigning them two codes: one related to the verbalized content and the other one related to the action performed during the verbalization. We named these aspects respectively «Thinking expression» and «Ongoing activity».

The second necessity was to code a very frequent kind of content showing the students' emotional experience. Indeed, during all the three thinking, emotions emerged from the verbalized content. Thus, we created a new subcategory labeled «Emotional experience». However, different kinds of emotions could be identified: negative and positive emotions.

Therefore, at this point of the analysis, the coding scheme was characterized by the two general categories «Thinking expression» and «Ongoing activity». The category «Thinking expression» was characterized by five subcategories: «Activities», «Context», «Artifacts», «People», and

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* The instructions have been translated from Italian. The original text was «Lo scopo di questa ricerca è di comprendere i processi cognitivi che le persone mettono in campo quando utilizzano le tecnologie per scopi formativi. Pertanto, ti chiediamo di svolgere un'attivita che si chiama «thinking aloud», ovvero «pensiero ad alta voce». Si tratta di esprimere ad alta voce «quello che ti passa per la mente», ogni tipo di pensiero che fai mentre utilizzi il computer. In particolare, ti chiediamo di mettere in pratica il thinking aloud mentre svolgi le attività online di questo corso universitario e di registrare la tua voce mentre esprimi i tuoi pensieri.

Dovresti verbalizzare tutto quello che ti passa per la mente mentre sei davanti allo schermo, anche pensieri, idee, associazioni che ti possono sembrare non pertinenti. Ti ricordiamo che quanto registrerai rimarrà anonimo e non sarà oggetto di valutazione, ma verrà utilizzato soltanto per scopi di ricerca. Ti ringraziamo per la collaborazione.

«Emotional experience». The subcategory «Emotional experience» was characterized by two codes: «Negative emotional experience» and «Positive emotional experience».

After this step, the texts were read again and codes that are more specific and linked to the already existing subcategories within the «Thinking expression» emerged. In the Table 3, all the subcategories and codes are displayed and described through a definition and an example (both in Italian and English). The definition is not provided where the code's label is explicitly clear.

Table 3

Categories, subcategories, and codes

Category	Subcategories	Codes	Example
Thinking expression	Activity: the activities that the student mentions.	Specific: the specific problem solving activity the student is running in during the TA	Si domenica pomeriggio dalle sedici<alle diciotto ok — Yes on Sunday afternoon from 4 pm to 6 pm ok
		Of the course: activities of the course different than the specific activity	entro oggi dobbiamo finire↓ il riassunto cioè la sintesi — We have to finish the synthesis by today
		Extra-course by computer: activities delivered by computer but different than the activities of the course	Lo devo proprio riformatta:re — I have definitely reformat it
		Extra: activities different than the activities of the course and not performed by computer	buon appetito — Have a good lunch
		Thinking aloud: the activity of the TA	vediamo quanto ho registra:to- Let me see how much I recorded
	Context: the contextual aspects that are mentioned by the student	The course: the context of the blended course	no anche qui il senso di comunita ((sorridendo)) — No, the sense of community here too ((laughing))
		Other University courses	eh vediamo, una richiesta — Let me see, a requirement
	Artifacts: the artifacts (review, maps, notes, articles, etc.) that the student mentions	Synergeia's tools	da che ora stanno qua? — What time did they arrive here?
		Technology	forse è il programma che rallenta un po' — perhaps the software slows down the computer system
		Created by students: maps, synthesis, etc.	lo salvo comunque novantasette duemilatre cosi devo porta: re — However I save it with the version 1997—2003
		Didactic artifacts: papers, files posted by the teacher, etc.	vediamo,forse in excel si apriva questo — Let me see, perhaps it works by using excel
	People: people dealing with the course (the teacher, other students, tutors, etc.) and mentioned by the student	Colleagues: other students participating in the course	Giuseppe l'ha letto — Giuseppe told that
		Of the course: teacher, tutors	per Nadia, Nadia — for Nadia, Nadia
	Emotional experience: negative and positive emotions felt for technology, activities, and people	Negative related to technology	uhm perchè non carica — uhm why does not it reload?
		Negative related to colleagues	perchè hanno messo il modello comportamentista? — why did they put the comportamentist model?
		Negative related to the specific activity	mi sono un po' persa — I lost a little bit
		Negative related to other activities	((sbadiglia)) ah che so:nno ((lamento)) — ((she yawns))I am asleep on my feet
		Positive related to technology	dai carica carica — come on, reload reload
		Positive related to colleagues	eh sono d'accordo con te — I agree with you
		Positive related to the specific activity	che carina — what a nice grid
Ongoing activity			

By reading the texts and coding them, a new need arose: to define more specific codes within the category «Ongoing action». Indeed, at least three subcategories could be coded, as students were performing an extra-course activity, the specific problem solving activity assigned during the TA, or other activities of the course. Furthermore, for each subcategory, two alternative codes could be assigned to the unit of analysis: «Verbal expression» or «Meta-reflection». The code «Verbal expression» shows that the student is just expressing the kind of activity she is performing; the code «Meta-reflection» means that the student is expressing an evaluation or a personal reflection about the activity she is performing. In the Table 4, the subcategories and the

codes related to the category «Ongoing activity» are displayed and described by an example (both in Italian and in English).

After creating the coding system, we coded all the texts calculating the frequencies for each code and each category. We report the graphs showing the three sections of the TA for each category and some comments related to each graph.

Three categories are particularly relevant in relation to the TA performed during the construction of the map (beginning of the course — blu line). Indeed, activities of the course (not the specific one of the module), colleagues, and negative emotions related to technologies and to colleagues have higher frequencies.

Table 4

Ongoing activity: subcategories and codes

| Category	Subcategories	Codes	Example
Ongoing activity	Extra-course activities	Verbal expression	Ecco vediamo se c'è qualche motivo non c'è non c'è niente — let me see if there are reasons why, no there is nothing
		Meta-reflection	Uffa una cosa va lentissima — heigh-ho, this works really slowly
	Specific problem solving activity related to the TA	Verbal expression	Allora vediamo un po' nel forum dei responsabili — so let me see the forum of the responsible
		Meta-reflection	cioè ((ride)) percheé non riesco a vederla tutta? — so ((she laughs)) why I cannot completely see it?
	Other activities of the course	Verbal expression	di Nadia — of Nadia
		Meta-reflection	((sbadiglia)) ah che sonno ((lamento)) — ((she yawns)) I am sleepy ((she complains))
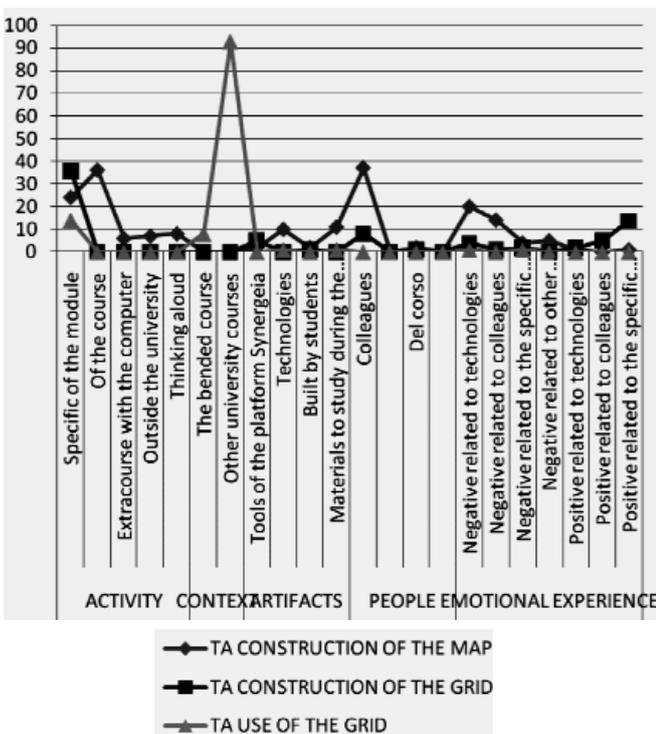
Fig. 1. The thinking expression
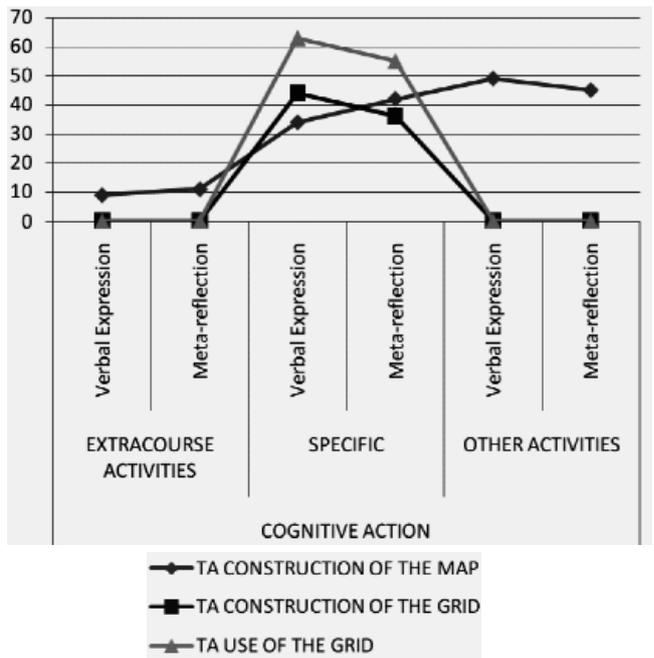
Fig. 2. The ongoing activity

Whereas, three categories are particularly relevant during the construction of the indicators' checklist (end of the course — red line). The specific activity of the module, colleagues, and positive emotions related to the specific activity have higher frequencies. Finally, during the use of the indicators' checklist (end of the course — green line) two categories are particularly relevant: the specific activity of the module and other university courses.

The TA performed during the construction of the map (beginning of the course — blu line) the category of «other activities» has more frequencies than others, especially in the subcategory of «verbal expression». During both the construction and the use of the checklist (end of the course — red line), a high frequency is associated with the category of the «specific activity».

Thus, through the description of the thinking processes performed during the TA, we can underline some important aspects. The emergence of the categories from the texts shows us the structure of such processes and their connectedness with the participation in the activities in which the student is participating. Furthermore, this structure changes in respect to the activities and over time (from the beginning to the end of the course), since the frequency of the specific categories changes in both of the dimensions through the course. Indeed, at the end of the course, it seems that cognitive and social resources are much more focalized toward the specific activity in which the students is participating and that the affective dimension (in general and in relation to activities) acquires positive aspects. Indeed, the emotional experience has a different qualitative characterization: negative at the beginning of the course, positive at the end.

Through the course, the student moves from a diffusion of cognitive processes among several activities, artifacts and people, to a focalization toward the specific activity, the artifact of the educational environment and the learning context.

Discussion and conclusions

This research project dealt with the subjective development understood in terms of both identity and thinking changes occurring through the participation in learning context mediated by new technology. Since the first study showed the relevance of activities and the mediating tools in the construction of I-positions, the processes of identity positioning were grasped as part of the complex set of higher mental function. Thus, the second study aimed at understanding how thinking processes, as component of such a set, change over time and in relation to problem solving activities. We want to highlight some points emerged from the second study, relating them to CHT. First, we claim that from the beginning to the end of the course a maturation of new ZPD occurs, as the thinking structure changes. Second, probably the participation in the collaborative learning activities has mediated the construction and interiorization of social rules, shared practices, and common aims, so that the emotional experience switches from a negative to a positive dimension. However, we want to underline the possible further develops of this research. Indeed, we contend that it opened several questions of interest for our research field, such as: what are the cause-effect relationships between activities and thinking processes? That is to say, what aspects of the course cause what effects? How the whole system of higher mental functions can be grasped? How the relationships within this system can be studied in such a kind of complex learning context? How the role of new technology can be highlighted?

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Развитие через развертывание учебной деятельности

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В статье рассматриваются аспекты, связанные с личностным развитием студентов, обучающихся по комбинированным программам (blendedlearning). Представлены материалы проекта по изучению изменений Я-позиции и развития мыслительных процессов у студентов, принимавших участие в комбинированном обучении. Данный проект, в свою очередь, включает в себя два исследования, проведенные в одном из университетов Италии. В рамках первого исследования изучались изменения Я-позиции у студентов в ходе групповых дискуссий. Результаты этого исследования свидетельствуют о том, что подобные изменения в процессе обучения тесно связаны с вовлечением в разные виды деятельности, предусмотренные комбинированными программами, и опосредованы использованием новых технологий в обучении. В ходе первого исследования возникли новые вопросы касательно взаимосвязи разных видов деятельности и развития мышления. Второе исследование ставило своей целью описать и проанализировать поток мыслей студентов в процессе решения задач. Результаты, полученные во втором исследовании, говорят о многомерной структуре мышления, меняющейся в ходе решения задачи, и показывают, что характер деятельности оказывает непосредственное влияние на конечный результат.

Ключевые слова: комбинированная система обучения, Я-позиция, развитие мыслительных процессов, структура мышления.